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Civil Engineering

OPERATIONS MANAGEMENT

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This instruction implements AFPD 32-10, *Installations and Facilities*. It provides the directive requirements for the operations management of civil engineering. It establishes a civil engineer worldwide baseline set of definitions, operations process descriptions, and organizational guidance which applies to the objective operations flight organization for both groups and squadrons (civil engineer groups should use the appropriate organizational equivalent to flight used in this AFI). Paragraph **2** does not apply when operations management functions are cost-compared under OMB Circular A-76 (if cost-compared, operations management functions will be spelled out in a Performance Requirements Document). Additionally, major commands (MAJCOM) may elect to further restrict applicability of this AFI based on competitive sourcing initiatives and to accommodate MAJCOM-unique requirements and desired flexibility. This AFI provides a good basis for defining operations management, regardless of the actual organizational means used to execute. This AFI does not apply to Air National Guard units.

(USAFA) Air Force Instruction (AFI) 32-1001, *Operations Management*, is supplemented as follows: This publication is to be used to identify the location of underground utilities and/or obstructions that are in the pathway of scheduled ground digging on USAFA Proper. This

publication applies to all Air Force, civilian, and contractor personnel who plan to dig into the ground four or more inches in depth for any reason. This publication does not apply to Air Force Reserve Command (AFRC) units or the Air National Guard (ANG). Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using Air Force (AF) Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate functional chain of command. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS).

SUMMARY OF CHANGES

This revision recommends a new organizational section structure below the Operations Flight. The Operations Flight is organized predominately into Air Force Specialty (AFS) named shops. The new flight sections are: Electrical, Mechanical, Pavements/Equipment, Structural, Utilities, Operations Support, and Maintenance Engineering (paragraphs **2** through **2.1.7**). Organizational flexibility is still allowed below flight level. The requirement for Air Force Information Management Tools (IMT) was eliminated because all required IMTs/forms are embedded in the approved automated work control software systems (paragraph **3.1**). Other minor administrative updates were made. ***A | to the left of a paragraph number indicates revisions have been made to that paragraph.***

Section A—Objectives

1. Main Objectives. The Operations Flight main objectives are to ensure Air Force installations can support the mission, maintain real property facilities, and develop and implement programs to improve the livability of our base communities. Operations management accomplishes the following functions using either in-house or contract resources.

1.1. Operates, maintains, repairs, constructs, and demolishes Air Force real property and real property installed equipment (RPIE) to accomplish the mission in the most timely and economical manner, considering both the total life cycle costs and the impact of facilities on the quality of life.

1.2. Provides trained personnel and technical expertise to support Air Force operations worldwide.

1.3. Maintains capability to respond to and eliminate any emergency condition 24 hours a day.

1.4. Conducts all activities in compliance with applicable environmental, fire, and safety laws, codes, and directives.

1.5. Provides reliable, cost-effective utilities to meet readiness requirements, satisfy installation needs, and maintain quality of life.

1.6. Provides base support services (e.g., pest control, grounds maintenance, snow removal).

1.7. Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customers' needs.

1.8. Establishes a system to provide customers the capability to accomplish work requirements using their own resources.

1.9. Develops and annually updates future plans for major work requirements (roofing, pavements, protective coating).

1.10. Effectively allocates in-service resources, including people, facilities, equipment, and vehicles to meet mission and customers' needs.

1.11. Provides customers with the costs of work or services performed on their facilities.

1.12. Maintains a time and material accounting system to collect and report the cost of doing business.

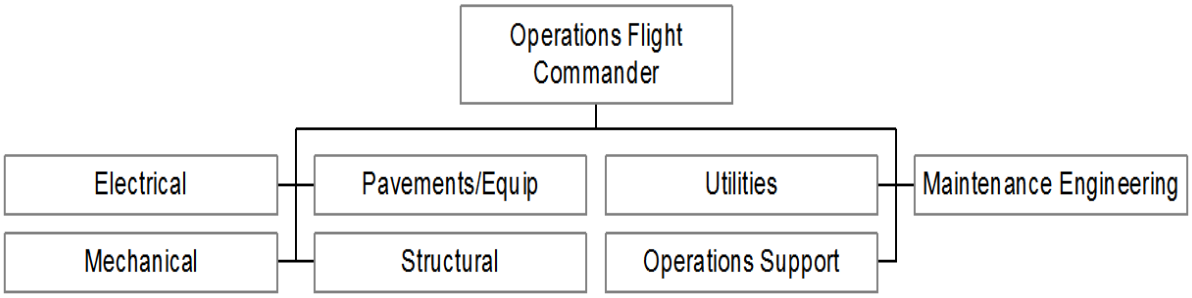
1.13. Provides effective logistics support.

1.14. Provides an effective facility management program.

Section B—Civil Engineering Management Concepts and Controls

2. The Operations Flight within the Objective Squadron. AFI 38-101, *Air Force Organization*, prescribes the Civil Engineer Objective Squadron down to the flight level: Housing, Engineering, Operations, Environmental, Explosive Ordnance Disposal, Fire Protection, Resources, and Readiness. Below flight level, Air Force organizational policy allows flexibility to establish new organizational sections, move tasks/functions between sections, and move manpower authorizations between sections. The Operations Flight is organized to: maximize training and efficiency with AFS-named shops; sustain operations with a reduced work force when military personnel deploy; provide centralized customer service; and focus engineering expertise on infrastructure systems. The flight is composed of sections to process requirements in an efficient and timely manner. They include Electrical, Mechanical, Pavements/Equipment, Structural, Utilities, Operations Support, and Maintenance Engineering. These sections are recommended but not required. For example, below flight level there is flexibility to organize to support the mission by establishing multiple-AFS teams, combining sections, or moving a function from one section to another section. (See **Figure 1**)

Figure 1. Example Sections Structure.



2.1. The Operations Flight Commander/Chief (or equivalent) is responsible for management of the operations function to include planning, budgeting, executing, equipping, and training

to ensure the most effective and efficient organization. The operations flight commander/chief will ensure all personnel receive training sufficient to meet core peacetime and wartime requirements and to promote maximum career development.

2.1.1. The Electrical Section, 3E0XX AFS, is responsible for the installation, operation, maintenance and repair of high and low voltage power distribution systems, electrical power and generating systems, cathodic protection, fire alarms, intrusion detection systems, airfield lighting systems, and aircraft arresting systems.

2.1.2. The Mechanical Section, 3E1X1 AFS, is responsible for the installation, operation, maintenance and repair of Heating, Ventilation, Air Conditioning and Refrigeration (HVAC/R) systems and equipment, in-house heat plant operations and Energy Monitoring and Control System (EMCS) and Direct Digital Control (DDC).

2.1.3. The Pavements/Equipment Section, 3E2X1 AFS, is responsible for the operation and maintenance of heavy construction equipment (e.g., loaders, graders, dozers, backhoes, dump trucks) and the construction and maintenance of concrete and asphalt runways, aircraft parking aprons, surface drainage, parking lots, grounds and roadways.

2.1.4. The Structural Section, 3E3X1 AFS, is responsible for the management, construction, repair, and modification of structural systems and wooden, masonry, metal and concrete buildings. Responsibilities also include the fabrication and repair of components of buildings, utility systems, and real property, as well as locksmith operations. The Work Order Execution Team will accomplish large, in-house work orders and provide the capability for the military to train and prepare for deployment taskings. Facility Maintenance Teams (FMT) will accomplish routine maintenance of high-use, high visibility facilities.

2.1.5. The Utilities Section, 3E4XX AFS, is responsible for the installation, inspection, maintenance, repair, troubleshooting and modification of water and wastewater treatment, distribution and collections systems; plumbing operations; natural gas distribution; liquid fuels distribution systems; and entomology services.

2.1.6. The Operations Support Section, 3E6X1, 2S0XX, 2T1X1 AFS, is responsible for the management and control of work requirements and logistics support for the in-house workforce. Included in this sections are Operations Management, Planning (both in-house and self-help), Vehicle Management, Material Acquisition, and Self-Help.

2.1.7. The Maintenance Engineering Section, 32EX, 3E5X1 AFS, is responsible for engineering expertise within the Operations Flight. Included are service and utility contract management, energy management, infrastructure plans, facility project review and engineering assistant tasks. Guidelines for Maintenance Engineering responsibilities can be found in AFPAM 32-1004V2, *Working in the Operations Flight: Maintenance Engineering*.

3. Work Control. Information management systems are used to manage, control, plan, schedule, and program work requirements in the most efficient means. The Air Force model automated systems are the Interim Work Information Management System (IWIMS) and the Automated Civil Engineer System (ACES). The capability of transmitting data to higher headquarters is mandatory.

3.1. Work Control Forms. The automated work control systems contain embedded software/forms to control work requirements

3.2. Accounting System. Use a time accounting system to record hours and costs to work orders and account codes. The system should provide the necessary data to assist with managing and analyzing work force effectiveness. Perform periodic reviews (e.g., work analysis, productivity, workload and manpower balancing) to eliminate or minimize potential performance problems.

3.3. Collection Work Order Numbers (CWON). The Automated Civil Engineer System Operations functionality (ACES OP) will manage the collection work order process. The collection work orders listed in **Attachment 2** will remain in use to support the logistics functionality.

4. Working in the Operations Flight Pamphlets. Working in the Operations Flight pamphlets provide civil engineers with clear, straightforward text on how to effectively accomplish the mission better, faster, and cheaper. The pamphlets contain information on flight duties and responsibilities, and procedures for accomplishing the Operations Flight mission (reference **http://www.e-publishing.af.mil/**).

Section C—Work Requirements

5. Customer Requirements. Work requests are either verbal or written. In the ACES OP application, Air Force forms will no longer be used or required. Base facility managers or other designated personnel will access and submit work requests electronically to the appropriate customer service location within civil engineering. Customer service personnel will determine the necessary documentation and establish the appropriate type of work order (planned work or direct scheduled work).

6. Coordination Requirements. The request must be coordinated with appropriate agencies on work that requires civil engineer support. ACES OP will support an automated coordination process. Work requests may be electronically transmitted to the various agencies that need to review and coordinate on all work requests. Civil engineers may opt to perform this coordination.

6.1. Coordinate fire hazards through the fire protection flight for assignment of a Fire Safety Deficiency (FSD) code. This includes rating of materials, fire protection access to an area or facility, or fire protection criteria affected by the proposed work such as personnel emergency egress, fire alarms, or suppression systems.

6.2. Coordinate health or environmental hazards through the base bioenvironmental engineer (usually assigned to the base hospital) for assignment of a Risk Assessment Code (RAC).

6.3. Coordinate safety hazards through the base safety office for RAC assignment.

6.4. Coordinate requests through the environmental flight to assess the environmental impact.

6.5. Coordinate requests with Base Communications to assess impact of facility renovations and major repairs.

6.6. Work Clearance. Work with other organizations such as Contracting, Security Forces, Communications, and utility companies (e.g., gas, cable) to ensure a tracking system is in place to cover liability for disruption of service and subsequent repairs. ACES OP will support an automated coordination process. Work requests may be electronically transmitted to the various agencies that need to review and coordinate on all work requests.

6.7. **(Added-USAFA)** Work Clearance Request. USAFA Form 144, *Base Civil Engineering Work Clearance Request*, must be submitted for approval before a project requiring digging can begin. Civil Engineering will work with other organizations such as Contracting, Security Forces, Communications, and utility companies (e.g., gas, cable, etc.) to ensure a tracking system is in place to cover liability for disruption of service and subsequent repairs.

7. Approval of Base Civil Engineer Work Request. The decision to approve or disapprove should be made promptly. Review and process the request only to the extent necessary to support the decision. The approval authority assigns the applicable priority. Refer to AFI 32-1032, *Planning and Programming Appropriated Funded Maintenance, Repair, and Construction Projects*, and AFI 32-1022, *Planning and Programming of NAF Facility Construction Projects*, for work classification and project approval authority levels.

8. Work Definitions. Operations management work will generally fall into one of two categories based on scope and complexity of the requirement (a man-hour threshold may be used to separate work categories). MAJCOMs are the ultimate owners of these definitions for purposes of uniform standards and reporting metrics and may modify these definitions to meet their unique requirements and desired flexibility.

8.1. Planned Work. Planned work, to include minor construction and direct scheduled work, requires detailed planning or capitalization of the real property records. The planner determines the scope, method, and type of resources and estimates the quantity of resources using approved cost estimating tools. For example, Engineering Performance Standards (EPS), commercially developed cost estimating models, or locally-approved cost estimating tools can be used to produce reliable standard-hour estimates. The following priorities are used for the planned work orders.

8.1.1. Priority 1–Mission. Work in direct support of the overall base mission that, if not done, would reduce operational effectiveness.

8.1.2. Priority 2–Safeguard Life and Property. Work needed to give adequate security to areas subject to compromise; to eliminate health, fire, or safety hazards; or to protect valuable property or equipment.

8.1.3. Priority 3–Support. Work that supports the mission or prevents a breakdown of essential operating or housekeeping functions.

8.1.4. Priority 4–Necessary. Not qualifying for higher priority.

8.2. Direct Scheduled Work. This work generally does not require detailed planning. The following work classifications are used for direct scheduled work.

8.2.1. Emergency. Work required to eliminate an emergency condition within 24 hours of notification that is detrimental to the mission or reduces operational effectiveness.

8.2.2. Urgent. Work that is not an emergency, but must be responded to and completed, or materials ordered, within 7 calendar days of receipt. If materials are ordered, completion shall be within 7 calendar days after receipt of materials.

8.2.3. Routine. Work that does not qualify as emergency or urgent work, but must be accomplished within 30 calendar days after identifying the requirement or receipt of material. Material requirements must be processed within 14 calendar days of receipt. When practical, group routine requirements into work packages and accomplish as a single undertaking.

9. Change/Cancellation of Work Orders:

9.1. Change orders are required when:

9.1.1. The work is likely to exceed the approval authority of the individual who originally approved the work requirement.

9.1.2. The scope of work changes from that described on the original work order resulting in a funded cost increase of 25 percent or more. A change of scope of work is any additional work not requested or approved on the original approval document.

9.1.3. There is an additional requirement to install, remove, or replace RPIE or other equipment that changes real property records.

9.2. Do not use change orders solely to eliminate variances between the estimated and approval lists.

9.3. Cancel work orders only by the same level of authority, or higher, that approved the original document.

9.4. Canceled minor construction work orders must be forwarded through real property for adjustment to the construction-in-progress account.

10. Recurring Work Program (RWP). Recurring work applies to real property, RPIE, or systems and equipment maintained by the Base Civil Engineer (BCE). Recurring work consists of operations, recurring maintenance, service work, and other recurring work for which the scope and level of effort are known without an earlier visit to the job site each time the work is scheduled. It includes all recurring work needed to prevent breakdown of critical facilities, equipment, or utilities. The RWP encompasses all work of a normally recurring nature except utility operations and contracted services. The RWP is managed by reserving hours in the schedule. Maintenance Engineering, along with shop personnel, is responsible for the annual assessment of the RWP; however, Maintenance Engineering oversees the development and maintainability of the program.

11. Work Order Closeout. Work order closeout should be completed as promptly as possible. This includes but is not limited to the following:

11.1. Drawings Update. Maintenance engineering will update as-built drawings for all work that creates changes to facilities or utility systems.

11.2. Capitalization. Send work orders that change real property records to the resources flight once the job is finished. The planner clearly documents the identity of changes to real and installed property. For self-help work that requires capitalization, the planner provides the total EPS hours multiplied by the predominant shop rate of the work being performed.

Specific capitalization instructions are contained in AFI 32-9005, *Real Property Accountability and Reporting*.

Section D—Special Considerations

12. Real Property Similar Equipment (RPSE). RPSE is non-RPIE structures and equipment deployed or permanently assigned to an installation as facility substitutes that support a MAJCOM mission. RPSE is not considered real property, as accountability will be strictly in the control of the user. Examples include (but are not limited to) hush houses, Survivable Collective Protective Systems (SCPS-2 and SCPS-M), uninterruptible power supplies, KMU-450 Chemical Protective Systems, Tactical Shelter Systems, and Chemically Hardened Air Transportable Hospitals. Civil engineer support for RPSE should be provided according to a memorandum of understanding with the owning organization, reimbursable, and subject to man-hour availability. Recurring requirements should be addressed and negotiated for contractual support.

13. Appliances:

13.1. Each MAJCOM will ensure the BCE develops an effective appliance program. The BCE shall ensure adequate management controls and safeguards are established to preserve appliance warranties and execute prudent appliance maintenance and replacement divisions.

13.2. Management of government-owned domestic appliances is the responsibility of the Housing Flight as outlined in AFI 32-6004, *Furnishings Management*. Government-owned domestic appliances are defined as appropriated funded refrigerators, stoves, washing machines, clothes dryers, freezers, portable dishwashers, microwave ovens, and ice machines.

13.3. Management of commercial equipment is the responsibility of the owning organization. Government-owned commercial appliances include commercial food service equipment in appropriated funded facilities such as dining facilities and flight kitchens. Budgeting and funding to replace commercial food service equipment in appropriated funded facilities is the responsibility of the using organization.

13.4. In the continental United States (CONUS), the Operations Flight is responsible for contract maintenance of domestic and commercial appliances unless good business practices determine the responsibility should be elsewhere. This includes providing the Quality Assurance Engineer (QAE) and technical assistance. Overseas, the Operations Flight is responsible for the maintenance, repair, and replacement of domestic and commercial appliances.

13.5. The BCE will always seek to competitively source the appliance maintenance function. For squadrons that have been cost compared, management responsibility will be placed with the service provider.

13.6. Maintenance and repair of unit-owned appliances will be at the discretion of the Operations Flight.

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Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

Air Force Publications:

AFPD 32-10, *Installations and Facilities*

AFI 32-1022, *Planning and Programming of NAF Facility Construction Projects*

AFI 32-1032, *Planning and Programming Appropriated Funded Maintenance, repair, and Construction Projects*

AFI 32-6004, *Furnishings Management*

AFI 32-9005, *Real Property Accountability and Reporting*

AFI 38-101, *Air Force Organization*

(Added-USAFA) AFMAN 33-363, Management of Records, 1 March 2008

Additional References

Air Force:

AFPAM 32-1003V3, *Working in the Resources Flight, Financial Management (Draft)*

AFPAM 32-1004V1, *Working in the Operations Flight, Functions and Organization*

AFPAM 32-1004V2, *Working in the Operations Flight, Maintenance Engineering*

AFPAM 32-1004V3, *Working in the Operations Flight, Facility Maintenance*

AFPAM 32-1004V4, *Working in the Operations Flight, Material Acquisition*

AFPAM 32-1004V5, *Working in the Operations Flight, Infrastructure Support*

AFPAM 32-1004V6, *Working in the Operations Flight, Heavy Repair*

Other:

Office of Management and Budget Circular A-76, *Performance of Commercial Activities*, August 4, 1983

(Added-USAFA) ***Prescribed Forms***

(Added-USAFA) USAFA Form 144, *Base Civil Engineering Work Clearance Request*

Abbreviations and Acronyms

ACES—Automated Civil Engineer System

ACES OP—Automated Civil Engineer System Operations (functionality)

(Added-USAFA) AF—Air Force

(Added-USAFA) AFMAN—Air Force Manual

(Added-USAFA) AFPD—Air Force Policy Directive

(Added-USAFA) AFRC—Air Force Reserve Command

(Added-USAFA) AFRIMS—Air Force Records Information Management System

AFS—Air Force specialty

(Added-USAFA) ANG—Air National Guard

BCE—Base Civil Engineer

BEEF—Base Engineer Emergency Force

CEMAS—Civil Engineering Material Acquisition System

CWON—collection work order numbers

CONUS—continental United States

DDC—Direct Digital Control

EAID—Equipment Authorization Inventory Data

EMCS—Energy Monitoring and Control System

EOD—explosive ordnance disposal

EPS—engineering performance standards

FMT—facility maintenance team

FSD—Fire Safety Deficiency

HVAC/R—Heating, Ventilation, Air Conditioning, and Refrigeration

IWIMS—Interim Work Information Management System

MAJCOM—Major Command

(Added-USAFA) OPR—Office of Primary Responsibility

QAE—Quality Assurance Engineer

RAC—Risk Assessment Code

(Added-USAFA) RDS—Records Disposition Schedule

RPIE—Real Property Installed Equipment

RPSE—Real Property Similar Equipment

RWP—Recurring Work Program

SCPS—Survivable Collective Protective Systems

(Added-USAFA) USAFA—United States Air Force Academy

Attachment 2

RESERVED COLLECTION WORK ORDER NUMBERS

A2.1. Work Order 00001: Bench or shop stock issues.

A2.2. Work Order 00002: Base service store issues.

A2.3. Work Order 00003: Bulk delivery items such as sand, gravel, and lumber by actual time accounting (ATA) work centers.

A2.4. Work Order 00004: Issues from base supply individual equipment unit.

A2.5. Work Order 00005: Mobility kits and other Prime Base Engineer Emergency Force (BEEF), Explosive Ordnance Disposal (EOD), and Readiness supplies not charged to specific mobility deployment.

A2.6. Work Order 00006: Common-use tools maintained in a tool issue center.

A2.7. Work Order 00007: Tool kits obtained from base supply.

A2.8. Work Order 00008: Individual tools issued from base supply.

A2.9. Work Order 00009: Equipment authorization inventory data (EAID) and shop equipment.

A2.10. Work Order 00010: Residual materials (except in Civil Engineering Material Acquisition System [CEMAS]).

A2.11. Work Orders 00011 through 00020: For use by CEMAS in IWIMS/ACES.